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**Mindfulness and meditation for pain control and stress relief in
the school-age children: An integrative review**

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Mindfulness and meditation for pain control and stress relief in the school-age children: An integrative review

Abstract

Mindfulness and meditation strategies hold the potential to reduce stress and pain response amongst school-aged children. Stress affects children physically, emotionally, neurologically, and psychologically. Excessive amounts of stress could lead to detrimental consequences later in life. High levels of stress experienced by children can negatively impact these domains, unlike mild stressful events that support positive growth and development. Additionally, the child's perception of pain may be improved positivity during stressful events. Pain in children sometimes goes untreated and misunderstood by healthcare providers and caregivers of children. Implementation of mindfulness and meditation into the child's plan of care can enhance their self awareness, empathy, and complex problem solving skills while also supporting effective coping strategies. Meditation originated in the Far East, but it is becoming increasingly popular across the world, especially in the United States. Mindfulness and meditation, used as a complementary and alternative therapy (CAM), has been a beneficial noninvasive stress reduction intervention for children. CAM is especially important for children who are still developing their cognitive skills and learning to express abstract thinking abilities. Teaching mindfulness meditation practices such as body scan and Kirtan Kriya (KK), a yoga singing exercise, can be utilized in the healthcare setting with school-aged children for pain reduction and relaxation purposes.

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MINDFULNESS AND MEDITATION FOR PAIN CONTROL AND STRESS RELIEF IN
THE
SCHOOL-AGE CHILDREN: AN INTEGRATIVE REVIEW

By

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Abstract

Mindfulness and meditation strategies hold the potential to reduce stress and pain response amongst school-aged children. Stress affects children physically, emotionally, neurologically, and psychologically. Excessive amounts of stress could lead to detrimental consequences later in life. High levels of stress experienced by children can negatively impact these domains, unlike mild stressful events that support positive growth and development. Additionally, the child's perception of pain may be improved positivity during stressful events. Pain in children sometimes goes untreated and misunderstood by healthcare providers and caregivers of children. Implementation of mindfulness and meditation into the child's plan of care can enhance their self awareness, empathy, and complex problem solving skills while also supporting effective coping strategies. Meditation originated in the Far East, but it is becoming increasingly popular across the world, especially in the United States. Mindfulness and meditation, used as a complementary and alternative therapy (CAM), has been a beneficial noninvasive stress reduction intervention for children. CAM is especially important for children who are still developing their cognitive skills and learning to express abstract thinking abilities. Teaching mindfulness meditation practices such as body scan and Kirtan Kriya (KK), a yoga singing exercise, can be utilized in the healthcare setting with school-aged children for pain reduction and relaxation purposes.

Keywords: Mindfulness, meditation, stress, pain response, implementation, body scan, Kirtan Kriya, CAM, coping strategies, Taiwan, United States

Mindfulness and Meditation for Pain Control and Stress Relief in the School-Age Children: An Integrative Review

The use of mindfulness meditation as a strategy for reducing stress and pain is a promising emerging field in nursing. While these strategies have been used successfully in some parts of the world for centuries, especially in the Far East, there has been a steady growth of acceptance in the United States. The use of meditation among children is a more recent phenomenon, and the popularity is growing. In 2017 the National Health Interview Survey found that children aged 4-17 in the U.S. were using meditation significantly more than in the past, with the numbers increasing by nearly ten times from 0.6 percent in 2012 to 5.4 percent in 2017 (Black, Barnes, Clarke, Stussman & Nahin, 2018).

Stress in children is an important topic for several reasons. According to Nordal (2010), chronic stress left untreated can contribute to psychological problems as well as physical conditions. Munsey (2010) surveyed children and found they were reporting an increase in their level of stress, and that parents were unaware of the degree and causes of their children's stress. Children face many stressors such as peer pressure, school performances and desire for autonomy (London, et al., 2017, pp. 772-773). The additional stress factors that come with health problems, hospitalizations, and pain make it clear that some young people are carrying a heavy burden. Without proper management and coping skills, stress can have a toxic effect on health. Mindfulness and meditation interventions that are taught to school-aged children show significant positive results (Center on the Developing Child Harvard, 2019).

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While a search on PubMed on the topic of meditation shows over 5,600 results, narrowing the search to meditation among children reduces the results to 239. While the potential of meditation for helping children with stress and pain reduction is promising, much more research will be needed to improve adaptations of adult practices and to test for efficacy among children. Although this paper is focused on children, much of the research on meditation, the descriptions about the variety of alternative practices of medicine, and research showing evidence of success comes from use among adults. While the amount of research on the use of meditation among children is minimal, the study of meditation for children in clinical settings is even less researched.

Purpose

The purpose of this integrative literature review is to explore the usefulness of mindfulness based interventions (MBI) on children's stress and pain. This paper explores stress in children, the impact of stress especially on young brains, and the use of meditation and alternative therapies to help control both stress and pain for children. While use of meditation for children in a health care settings has not yet been extensively studied, this review will look at that application and explore ways that stress relief and meditation can be taught to children. It will cover the research on the effectiveness of these therapies.

School-Aged Children and Stress

Stress can impact the mind, body, and spirit of school-aged children positively, or can have a counter-regulatory effect in which children cannot adapt to and manage everyday life stressors. Children can suffer emotionally from excessive accumulated stress which is also known as toxic stress (Center on the Developing Child Harvard, 2019). Stress can have negative

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or positive effects on school-age children. It is important to examine the difference in the effects of stress to increase the positive impact while decreasing negative impacts.

Stress can present itself in many different forms, affecting individual school-age children differently. The American Institute of Stress (AIS) (2018), defines it this way: “People have very different ideas with respect to their definition of stress. Probably the most common is “physical, mental, or emotional strain or tension.” Another popular definition of stress is “a condition or feeling experienced when a person perceives that demands exceed the personal and social resources the individual is able to mobilize” (para. 2). School-age children can experience stress within the school setting, amongst peers, in their home environment or within clinical settings.

Stress is a challenge for people of all ages but can be especially difficult and toxic in childhood. Unlike adults who make their decisions, children are less in control with fewer choices than adults. Children lack the knowledge, perspective, and rights that adults have, which can potentially increase their stress level (Petersen, 2014). Stressful situations can arise when school-aged children feel like they are incapable of achieving a task or meeting the expectations set by others. During this time in their lives they are still growing physically, mentally and socially. Due to undeveloped skills, children can become very frustrated when they are unable to complete a task as well as someone who may be more mature (London, et al., 2017, pp. 770-771). Having others make choices for them, and acquiring new life skills can cause children to feel various levels of stress. One dangerous levels of stress develops when children experience adverse events in their childhood that have a cumulative negative impact on their well-being. Family and neighborhood instability, substance abuse, crime and exposure to violence can take a heavy toll on developing children (London et al., 2017, pp. 772-773). Furthermore, research has

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shown that the experience of extreme stress such as, child abuse and neglect, has severe and profound lifelong physical, neurological, and psychological consequences that are difficult to address later in life (Petersen, 2014).

Children under stress may exhibit behaviors that are not easily recognized as a response to stress and can be misdiagnosed as a behavior problem or personality disorder. Stress in children can present itself in many forms, all of which influence adults' actions and reactions (Brasher, 2017). The impact of stress and the way school-aged children perceive stress can be emotionally and mentally draining. A lack of resilience and an inability to adapt to new situations and environments can provoke anxiety-induced stress. According to Brasher (2017), "Chronic stress is bad for adults, but it is particularly troublesome for children, because among many other effects, it can disrupt still-developing white matter in the brain, causing long-term problems with complex thinking and memory skills, attention, learning and behavior" (para.2). Unidentified stress in the school-age child can cause disruption in the developing brain leading to problems in later life with cognitive skills, including learning and memory.

Interventions need to be identified to assist school-aged children in stress management. Fortunately, research is demonstrating that children can be taught mindfulness-based approaches for coping and stress management that is effective in improving their long term health and the healthcare experience for sick children (Brasher, 2017). It has been found by researchers that "Once positive coping skills are learned and put into practice, especially as a family, they can be used to manage stress for a lifetime" (Brasher, 2017, para. 8). A meta-analysis of over 200 other studies found that the children who worked on adapting to the stress had better outcomes than those children who used strategies to ignore or avoid the stressors. The research also revealed

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that children who experience high levels of stress in their lives benefit most from learning to adapt to those stressors instead of attempting to change the stress itself (Brasher, 2017). These studies demonstrated that with learned skills, the school-aged child can be taught to reduce their stress.

Health care professionals are positioned to identify and address social-emotional and behavioral problems in children. Recently, there has been an increase in the number of screening tools available for use on young children to help in the identification of potential problems. According to Carter, Briggs-Gowan and Davis (2004), “the assessment methodology currently exists to routinely screen very young children for social-emotional and behavior problems as well as delays in the acquisition of competencies in pediatric settings as well as in early intervention programs” (p.1). While screening is potentially cost-saving as well as highly beneficial to children, routine screening is not widespread (Carter et al, 2004). Considering the cost to benefit ratio, there is a compelling case to support the implementation of universal screening so that children can have better outcomes in adulthood.

One cite to implement universal stress screening in the school-aged child is school. Merritt, (2016) proposed that school nurses provide a checklist that could be used to conduct informal screenings in an elementary school setting based on the nurse’s contacts with students. In considering the context or basis of the screening, Merritt (2016) states,

Explaining physical symptoms or describing a playground accident are demanding communicative contexts for children, as they must be able to convey both the past and the present, what they have experienced, and what they are currently feeling through words, gestures, or facial expressions. (para. 2)

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Merritt (2016) suggests that school nurses are well-positioned to observe children over time, and use their regular contacts as an opportunity to become familiar with typical speech and language development as well as to intentionally and informally evaluate the students' communication skills. She cautions that the separations between stages of development are not definitive, and also that all of these assessments must consider the cultural norms relative to the community in which the students live. Taking into account the students' culture along with their educational level can assist in preparation for age/developmentally appropriate screening. Incorporating screenings for stress into a typical well child visit to the pediatrician ought to be a universal practice. Screening for stress could be similar to the current screenings of domestic abuse that adults often receive at their doctor visits (Merritt, 2016). Despite differences in developmental levels and cultural norms, informal screening at school is a potential method for implementing universal stress screening.

Stress is not always bad. Stress can positively impact children's motivation and enhance their ability to do the best they can in school classes and activities. Stress in moderation can help school-aged children achieve new tasks, adapt to new environments and encourage individuality (Brakeley, 2014). For instance, a ten-year-old child planning to join a soccer team may feel nervous and anxious because of the lack of experience playing soccer and not knowing anyone on the team. With reassurance and encouragement from caretakers, the child may willingly agree to give soccer a try. Upon arrival the child often adapts to the new environment and comes to enjoy soccer. He meets new friends and learns how to become a valuable asset to the team. This type of positive stress is short-lived and healthy because the child was encouraged to follow

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through and try a new sport in this case. His confidence may grow, and he can now draw on this positive experience when facing a new and stressful situation in the future.

Remember, the way a child develops independence, confidence, and resilience is by hundreds of these small, daily, positive stress responses (Kashiwa. 2014). Think of a tree growing in an open field. It's exposed to fierce winds, storms, heavy rain and drought. In response, the tree develops a deep root system and a strong, solid trunk. It will become sturdy, durable, and healthy (para. 4). One positive impact of stress is the development of resilience.

Even amongst school-aged children considered to be in positive, appropriate environments, stress can become overwhelming. Often children participate in sports, aftercare programs, and numerous other activities that result in a lack of downtime. “Many kids are too busy to have time to play creatively or relax after school. Kids who complain about all their activities or who refuse to go to them might become stressed. Parents should talk with their kids about how they feel about extracurricular activities” (Steven, 2015, para. 3). It is so crucial for children to be able to learn freely and creatively on their terms, along with some structured play. Children who are provided the option to participate in activities they sincerely enjoy are less likely to feel overly stressed for prolonged periods (Steven, 2015). A stress evaluation needs to occur for extracurricular activities that are thought to be positive must be evaluated for a stressful component.

School-aged children can experience more than one type of stress. Kashiwa (2014) identifies three types of stress children are experiencing include positive, tolerable, and toxic

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stress. Because stress can range from beneficial to toxic for children, there is a plethora of literature on appropriate stress levels and the point at which it can become detrimental.

Identifying that line between the two is so important, and varies from one child to the next.

Franke (2014) defines positive stress response “ as a normal stress response and is essential for the growth and development of a child. Positive stress responses are infrequent, short-lived, and mild” (para. 6). As long as a child’s experience of stress is not prolonged and anxiety-induced, it can produce beneficial outcomes and aid in enhanced social relationships and a positive self-image. Some school-aged children experience prolonged stress due to the inability to adapt to new environments or the inability to sustain healthy relationships. Excessive, prolonged stress can delay normal growth and developmental milestones, thus putting them at risk for more severe complications in the future if gone unaddressed (Franke, 2014). School-aged children who experience severe complications from toxic stress are at risk for developmental delays and inadequate coping mechanisms.

Toxic Stress

When the school-aged child reaches a level of stress that is overwhelming, it can result in regression of unproductive behavior. Toxic stress response is defined as prolonged exposure of adverse experiences without coping strategies nor the support of a caregiver over a long period. Stress experienced by a child can become unhealthy when it interferes with social relationships, family dynamics and intrapersonal growth. Toxic stress levels can also lead to physically altering symptoms such as recurrent headaches, a lowered immune response, upset stomach and inevitable fatigue (Center on the Developing Child at Harvard University, 2019). According to the Center on the Developing Child at Harvard University (2019)

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The more adverse experiences in childhood, the greater the likelihood of developmental delays and later health problems, including heart disease, diabetes, substance abuse, and depression. Research also indicates that supportive, responsive relationships with caring adults as early in life as possible can prevent or reverse the damaging effects of toxic stress response (para. 7).

Stress is an inescapable factor of life experienced by children of all age groups. Without exposure to proper coping strategies and skills, stress can cause frustration, behavioral problems, and health problems. Alternatively, mastering coping strategies can enhance a child's mental and physical health while also improving critical thinking skills (Center on the Developing Child at Harvard University, 2019). When the school-aged child reaches the level of stress that is overwhelming or toxic, coping strategies need to be mastered to decrease the stress level and the associated negative consequences.

Children are especially vulnerable to the detrimental aspects of stress. They may suffer dire consequences to their health and well-being when they are subjected to a substantial level of stress. Ongoing high levels of the stress response phenomenon has been coined “toxic stress.” Exposure, especially long term, has been shown in children to result in physical and mental problems. Toxic stress can disrupt the development of the child's vital organs along with altering their brain dynamics. Children who are cared for and supported in healthy relationships earlier in life can prevent these diseases from occurring and even reverse the adverse effects of toxic stress (Center on the Developing Child at Harvard University, 2019). Toxic stress is affecting school-aged children negatively and without the proper support and coping strategies it can impede developmental growth.

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When stressful situations are at a more extreme level, the consequences for children are dire. Franke's (2014) article discusses childhood toxic stress that is differentiated from positive stress and tolerable stress. Stressors experienced by a child stimulates the sympathetic nervous system which leads to a chain of neuroendocrine-immune responses. Respirations increase as do heart rate, blood pressure, and oxygen consumption. Under normal circumstances, after the stressor is gone, the body returns to a normal baseline state. When stress becomes toxic abnormal physiologic responses continue. In severe cases, there is even a risk of organ failure.

Stress impacts both the parasympathetic (rest/digest/flight) and sympathetic(fight) nervous system impacting the response of a school-aged child. As long ago as the 1970s, Benson (1974) was a pioneer in investigating what he called "the emergency response" referencing the detrimental impact of stress that engages a fight or flight activation of the amygdala. As the science of the brain developed through the 1980s and 1990s, increased research illuminated the extent of the impact of stress, or adverse life events, on human development.

Concerns about the long term impact of stress on children began to develop. According to the American Academy of Pediatrics (2012), "This cumulative stress-induced burden on overall body functioning and the aggregated costs, both physiological and psychological, required for coping and returning to homeostatic balance, have been referred to as 'allostatic load'" (p. e235). Repeated incidents lead to changes in the ability to regulate oneself. AAP (2012) raises the concern that because the young child's brain is so susceptible to chemical influences, there is growing evidence from research that childhood toxic stress can disrupt the "developing architecture" of the brain. Center on the Developing Child at Harvard University (2019) created a brief video on the topic of childhood toxic stress. In it, a healthy neuron is illustrated in the

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prefrontal cortex of a young child compared to a neuron of a child under toxic stress. The typical child's neuron has many connections, while the stressed neuron has far fewer. It is difficult to make up for these neuronal deficits later in life. When a school-aged child experiences neuronal deficits, there are immediate emotional consequences which affect learning and memory.

Many of the immediate emotional consequences of excessive stress are commonly known. These include anxiety, depression, irritability, and isolation. Stress also has negative cognitive impacts on the developing brain consisting of poor judgment, negative mindset, enhanced anxious thoughts, and mood alterations. When children are experiencing these symptoms, they may be in a family or institutional environment where the symptoms go unnoticed by adults. In this situation, health care providers need to monitor for these symptoms and take actions to activate social supports and resources to alleviate the stressful situations (Segal, Smith, Segal & Robinson, 2019). Under stress, it becomes difficult to concentrate due to their perceptual visual field (smell, touch, vision, sound, taste) shrinking. The severity of stress the child is experiencing will directly affect the amount of information they will be able to process at that moment (Segal, Smith, Segal & Robinson, 2019).

Consider stress among children when they are accessing health care. Whether in a wellness visit or when they are hospitalized, stress and anxiety can be elevated for a child. They may be afraid, nervous, in pain, and also notice that their parents or caregivers are upset. Perhaps they don't have much understanding of their condition or treatment. Even a well-adjusted child may experience a high level of stress in this situation (Lerwick, 2016). It is imperative that health care providers assess for stress in the hospitalized school-aged child and, if present, plan interventions to relieve that stress.

School Aged Children's Experience with Pain

In addition to stress relief, pain control is another possible reason for children to try meditation. Pain, no matter its form, can be experienced in so many different ways amongst children. The genuine feelings and level of pain experienced by a child is a personal experience that cannot be measured. Therefore, caregivers and medical professionals need to trust and document pain as it is reported by the child (Mathews, 2011). Unfortunately, the extent of pain experienced by children is undertreated and misunderstood. Caretakers and medical professionals may have a misconception of what pain means to a child. Some believe that children are unable to report, are unreliable indicators of their pain level, that they have less pain than older people, and that they will most likely never remember the pain (Mathews, 2011). Health care providers must respond and treat any complaint of pain from the school-aged children in their care.

When treating children, it is essential to understand the role of childhood pain thresholds that are interconnected to their current level of development. School-aged children in the middle years (6 to 12), experience pain in different ways. School-aged children during this time are usually developmentally advanced enough to be able to report and accurately rate their pain levels (London, et al., 2017, pp. 772-773). The intensity of pain may be misunderstood because it varies from child to child. It is not unusual for a young child to cry, while a crying adult doesn't need to convince anyone they are experiencing extreme pain (Mathews, 2011). According to Mathews (2011), "Many health care providers also at least subconsciously believe that they, rather than the child, can accurately judge a child's pain experience" (p. 1). An injured child was witnessed screaming and wailing in pain after an injury. Several adults nearby considered it

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“histrionics” although the injury turned out to be a broken leg (Mathews, 2011). Misconceptions of school-aged children's pain is an example of adults not believing a child. Erring on the side of the child's report is better than minimizing their reactions.

Adults, including health care professionals, may attribute a child's distractibility to the absence of pain. Because a child can be distracted, one should not have the perception that pain does not exist. Believing that distractibility equates to absence of pain represents a misunderstanding of the powerful roles of distraction and comforting in the attenuation or relief of pain (Mathews, 2011). For school-aged children, in particular it is vital to believe the pain they report is what they are feeling. If a child is unable to communicate their physical pain level, other assessments and observation can be made to help estimate the pain level accurately so that health care providers can initiate pain relief interventions. For instance, an irritable child, sweating, with an increased heart rate, moans, and groans, and wrinkles the face is helping the medical provider to determine the child is in pain. Other strategies can be included to help a child report their pain if they are unable to communicate verbally, like pointing at pictures, scales and drawing (Mathews, 2011). Every child is unique and will require an individualized personal plan for their specific condition. Working with the family in collaboration and having them close by can dramatically decrease the child's pain.

School-Aged children need the support of their caregivers when they are experiencing the stress of pain. Children who are in pain positively respond when loved ones involved in their care and are more willing to participate in activities (Mathews, 2011). “Children are particularly responsive to pain-controlling strategies that involve their imaginations and senses of play. Sensory and procedural information coupled with behavioral techniques can be used to distract

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children away from painful procedures and to decrease fear and anxiety” (Mathews, 2011, p. 70).

Meditation can serve as a valuable tool to help distract the mind and control the current level of pain the child is experiencing.

Complementary and Alternative Medicine (CAM)

Complementary and Alternative Medicine (CAM) can be beneficial for school-aged children under mild, moderate, or high levels of toxic stress. There are no commonly agreed upon definitions for practices that are “Complementary” or those that are “Alternative.” Usually, non-mainstream practices that are used along with conventional medicine are considered “complementary.” “Complementary” includes but is not limited to chiropractic care, acupuncture, imagery, herbal remedies or even relaxation exercises like yoga or meditation that may reduce stress and anxiety. Sometimes, treatments are only labeled “alternative” if they are used instead of traditional treatment (NIH, 2017; Tabish, 2008). “Alternative” is a treatment approach that can be effective for all age groups, including children. It can be used either alone or in combination with conventional medicine and may include massage, dietary supplements, reiki, dance, and art (Tabish, 2008). “The most common CAM therapies used in the USA in 2002 were prayer (45.2%), herbalism (18.9%), breathing meditation (11.6%), meditation (7.6%), chiropractic medicine (7.5%), yoga (5.1%), body work (5.0%), diet-based therapy (3.5%), progressive relaxation (3.0%), mega-vitamin therapy (2.8%) and visualization (2.1%)” (Tabish, 2008, para. 7). Various complementary and alternative approaches are increasingly endorsed by health care professionals to improve patient-centered care. “In the United States, approximately 38 percent of adults (about 4 in 10) and approximately 12 percent of children (about 1 in 9) are using some form of CAM” (NIH, 2017, para. 1).

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Complementary and alternative therapies may be implemented to accomplish the overall goal of improving school-aged children's holistic health. Another benefit of CAM is that children can be more active participants in their care and recovery. These therapies may be employed for a variety of childhood health-related issues, from coping with the fear of medical procedures to more serious treatments (NIH, 2017; Tabish, 2008). “Many patients feel that alternative medicine may help in coping with chronic illnesses for which conventional medicine offers no cure, only management” (Tabish, 2008, para. 7). An effective alternative and complementary therapy for school-aged children is the act of being mindful, practiced in combination with yoga in any setting. Some significant benefits were noted on the child's emotional, interpersonal, cognitive function and even their overall spiritual domain (Rempel, 2012.) These studies support that there are benefits in the use of CAM therapy in school-aged children.

CAM is beneficial for not only school-aged children in the United States, but also in other countries. Indeed children around the world have many stressors and a vast range of possible causes of toxic stress. In the Far East, meditation is perhaps more acceptable for children. Some aspects of the Taiwanese culture, in particular, could make CAM an especially effective intervention. For example, the practice of meditation and quiet personal reflection has deep historical roots in the prevailing culture. Unlike in the United States, where meditation is viewed with skepticism, the Taiwanese are more readily willing to embrace the practice (Ross, 2016). Implementation of CAM into the U.S. may benefit school-aged children who experience copious amounts of stress seeking an alternative to conventional medicine for pain relief.

As interest increases in the value of complementary and alternative therapies, new research is informing the practice and implementation of these techniques. Initially, it was

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mostly adults who were using meditation, and now the value for children is becoming more apparent. In light of the potential harm caused by high-stress levels in children's lives, health care practitioners, as well as caregivers of children, ought to consider interventions such as meditation to reduce stress (NIH, 2017). Children have benefited from different types of alternative therapies, and meditation is one of them.

What is Meditation

Meditation may be interpreted as thinking about life and analyzing struggles one faces. Meditation is the opposite. Meditation involves the mind, body, and soul, allowing the practitioner to center on the present moment. There is a wide variety of ways to practice meditation, but they almost all entail four components. It is recommended that practitioners; 1. Have a quiet location without distractions; 2. A comfortable posture that could range from walking, sitting, or lying down; 3. A specific thing to focus on; and 4. An open mind to avoid judgments (National Center For Complementary and Integrative Health [NIH], 2016). meditation when practiced routinely in a calm environment may assist in enhancing memory and the ability to focus for longer periods at a time.

The practice of meditation encourages clearing the mind of all worries and being able to reach a sense of tranquility. Self-awareness is attained by actively engaging in meditation practices daily, weekly, or even monthly. Anyone new to meditation, children in particular, may only be able to focus for short periods when first beginning. With patience and increased practice time focus is achievable for more extended periods. The more meditation is utilized and practiced by children in sessions, and the more effective meditation can become. Meditation can help with awareness of feelings, organization, and calming of emotions and may even help

improve the general frame of mind (NIH, 2016). The United States, using an international perspective, may find meditation as useful as it is in other countries around the world.

A Worldwide Perspective with an Emphasis on Taiwan

Meditation in the United States has been relatively recent compared to the practice in the Far East. People in the Far East have used meditation practices for centuries allowing for enhanced self-regulation in religious practices. Burke, Lam, Strussman and Yang (2017) note that the use of meditation in the United States appears to have started after World War II, presumably after American soldiers were stationed in Asia.

Evidence of widespread acceptance of the purpose and benefits of meditation and (CAM) is prevalent in Taiwan today. CAM is used and practiced at Taichung Hospital in Taichung City, with widespread acceptance and appreciation of its effectiveness. Acupuncture treatment was being administered in a room at the hospital as a form of CAM. The patient was seen with extensive needles inserted in the face. The staff at the hospital considered this normal and routine, while the group of American visitors displayed a level of shock and surprise. At Da Zhiran Dementia Community Service Center, tai chi, yoga, and other movement meditation were being practiced as a treatment for dementia. At the Cheng-Chin Cancer Control Center in Chung Kang, Taiwan, patients were observed meditating at the Buddha statues throughout the facility. These examples demonstrate a wider implementation and acceptance of these alternative treatments than is commonly found in the United States. Traditional Chinese Medicine in Taiwan including meditation, herbal remedies, reflexotherapy, phytotherapy, chiropractic treatment and acupuncture are widely used for health promotion. Health insurance in

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Taiwan offers more coverage toward alternative and complementary therapies like acupuncture for medical treatment than the United States (Dharma Drum Mountain, 2007).

Certain aspects of the history and culture of Taiwan may provide cornerstones of support for the widespread practice of meditation in the country. Taiwan's dominant ethnicity is Han Chinese and the predominant language is Mandarin Chinese. Although Christianity is becoming more pronounced in the eastern areas, Buddhism, folk religion and Confucianism are the core beliefs held by the majority of Taiwan's population. Superstition, influenced by ancient traditions, is a belief system held by many in the area. Taiwanese people are known for their attentiveness, caring and friendly demeanor (World Travel Guild, 2019). Integration of Taiwanese culture through meditation practices continues to influence people.

The education system in Taiwan can be especially challenging for some school-aged students pushing to fulfill academic expectations. Neuropsychiatric Disease and Treatment Research Center discusses a study on senior high school students in Taiwan that correlates stress with a negative emotional and mental impact overall. “We found a relatively high proportion of fatigue, sleep problems, daytime sleepiness, and depression among senior high school students, and demonstrated the association between fatigue and other factors” (Chen, et. al., 2015, para. 2). If stress among school-aged children is not regulated early, children may face similar challenges later on in high school as well. The education system provides additional threats to children's emotional and psychological status when managed poorly.

The Association of International Educators (NAFSA) discusses Taiwan's educational system. Schooling there is becoming more and more competitive, and teachers are required to undergo an evaluation system to ensure teachers' qualifications, professionalism, and

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competence. According to NAFSA, “While the heritage of nationalism and collectivism have been stressed in traditional education, Taiwan is implementing new pedagogical ideas by promoting respect for individuality and learner-centered education” (Shin, 2018, p. 1). As advancements are beginning to be made towards improving higher education in Taiwan, additional measures need to be taken to help students reach these goals while maintaining their health.

Meditation in Practice

Acquiring a secure and peaceful environment while teaching the basics of any meditation practice is an effective and constructive approach. After teaching a school-aged child the basics of meditation, they can begin exploring and personalizing their meditation practice based on their interests. Fortunately, there is a wide array of meditation styles, techniques, and resources from which children may choose.

In Taiwan, Chan (Zen) meditation is one of the more commonly practiced techniques requiring self-observation and awareness. Discovering the true nature of yourself by being consciously aware of your behaviors, emotions, and mindset help solve complex obstacles. Chan meditation calms the body and enhances self-awareness while also giving rise to opening the door to wisdom. Chan meditation is composed of four elements, including faith, understanding, practice, and realization (Dharma Drum Mountain, 2007). The Dharma Drum Mountain organization (2007) demonstrates an understanding of the four elements “Without faith, we cannot understand; without understanding, we cannot practice; and without practice, we cannot realize enlightenment. (para.3). Meditation in this manner can be practiced while walking, standing, laying down although the lotus or sitting position is known to be the most common and

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effective posture. Meditation can take place in any position or environment that is most comfortable and relaxing for the individual.

Understanding of self and the “ordinary mind” presents a state of clarification through living in the present moment. “Chan meditation spans different stages, from acknowledging the self, to self-growth, to dissolve the self and gradually to establish the right view of life.

Contemplating Chan from the point of self to no-self, free of vexations, one can truly be at ease without obstructions” (Dharma Drum Mountain, 2007, para. 2).

The ultimate goal of Chan meditation is to free yourself of all other attachments and reach self-actualization also known as enlightenment. Enlightenment can only be achieved by human beings, and is said to be a doorway to extensive knowledge foreseeing the future changing someone's perception entirely. School-aged children can benefit from Chan meditation by learning the basics of meditation (straight back, chin centered and palms facing upward) and actively participate in sitting meditation sessions. Once sitting meditation has been mastered, Chan meditation teachings can be implemented into the meditation session and carried onward into adulthood. Other common meditation techniques practiced in Taiwan include tai chi, chakra, yoga and Transcendental Meditation.

In the United States, people turn more towards conventional medical treatment rather than relying solely on alternative and complementary therapies. The most common CAM therapies used in the U.S. include deep breathing exercises, yoga, massage therapy and meditation. (National Integrative Health [NIH], 2017). Deep breathing exercises are used in addition to meditation practices to assist with calming the body and focusing the mind. “In 2012, meditation included Mantra meditation, Mindfulness meditation, Spiritual meditation, and

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meditation used as a part of other practices (including yoga, tai chi, and qi gong)” (NIH, 2017, p.1). A combination of these meditation practices were used by 1.6% of children in the United States during the year 2012 (NIH, 2017). Conventional treatment used in combination with popular meditation practices in the U.S. can be beneficial for relaxation along with improved treatment intervention outcomes.

The Impact of Mindfulness and Meditation on Children

Mindfulness and Meditation impacts children physically, cognitively, and emotionally. Mindfulness and Meditation practices may be beneficial for school-aged children, especially under stressful circumstances. Some widely reported benefits of these non-conventional treatments are that they are less invasive, reduce overall blood pressure, improve circulation and can decrease anxiety and depression (NIH, 2017). A variety of meditation techniques and styles can help children ease into a new situation or stressful event in a healthy way. For instance, say your child comes to you early in the morning on their first day of school saying they do not feel right or their stomach is upset. If you suspect or they say they are feeling overwhelmed or nervous, you can make meditation resources available to them to help ease their worries. After 5-10 minutes of imagery meditation, your child may immediately feel much more relaxed and their stomach upset has subsided. What's especially beneficial about a scenario like this one is the guardian used alternative resources to teach the child to cope instead of assuming they needed medication right away. When under stress children may display similar physical signs and symptoms of illness, such as the flu or a cold. It is crucial to ask questions and monitor their physical self and behaviors” (Center on the Developing Child at Harvard University, 2019).

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Implementation of simple Mindfulness and Meditation practices into the school-aged child's home and school environment may help ease stress-induced worries.

Children under stress may benefit from mindfulness and meditation practices. These practices may help decrease their level of stress experienced in the present moment. Children who decide to participate in meditation practices actively have heightened awareness, better manage stressful situations, demonstrate patience, complex problem solving, enhanced creativity and imagination, and learn to become more understanding of others' situations (Mayo Clinic, 2017). When caregivers and guardians use meditation and mindfulness as an alternative resource during times of stress or down-time, more attention and focus can be geared toward the child's studies (Black & Slavich, 2016). The goal is to decrease fatigue and stress amongst all students, especially during this time of life, while they are still immersed in the pressure for academic performance. meditation can help school-aged children approach stressful or chaotic situations calmly.

Mindfulness and Meditation show potential benefits for health improvement of behavioral along with cognitive functioning of school-aged children. The American Academy of Pediatrics (AAP) (2016) conducted a study to determine how meditation and mindfulness affected the health of children related to stress. "A number of studies in school settings show improved attention and behavior. Some research has shown benefits for those with attention deficit hyperactivity disorder (ADHD), anxiety, depression, school performance, sleep, behavior problems, and eating disorders. For example, a trial of 300 low-income, minority urban middle-schoolers using school-based mindfulness instructions led to improved psychological functioning and lower levels of posttraumatic stress disorder (PTSD) symptoms" (para. 8).

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Mindfulness based interventions show positive health outcomes for children whom have or at risk for developing psychological, attention, and behavior difficulties related to stressors.

There was a study that involved 242 Taiwanese students meditating for two hours a week over an 18 weeks. Yang, Su & Huang (2009) found that meditation was successful in teaching students to adapt to difficult stressful situations. Traditional Chinese wisdom also played a role in health and meditation promotion (Yang, Su & Huang, 2009). Students face many challenges throughout their educational careers, and if promoted by educators and encouraged more into their curriculum, meditation can be an increasingly valuable tool that can help them adapt to stressful encounters. What's interesting is that mindfulness enhances cognitive functions involving the middle prefrontal cortex for instance, morality, self-awareness, and fear modulation (Davis & Hayes, 2011). Research has shown that meditation may also give people greater cognitive flexibility (Davis & Hayes, 2012). Greater cognitive flexibility is especially important to children who are still developing their cognitive skills and learning to express abstract thinking abilities.

Meditation and mindfulness can impact the body positively as youth head into their adulthood. Children who develop a habit of meditation could have lifelong benefits of stress reduction. Mindfulness practices have also been found to impact physical health positively. Improvements have been documented in the immune system, sleep, blood pressure, and even changes in the brain related to attention, regulating emotions, empathy, and body awareness (NIH, 2016). Dharma Khalsa (2015) discusses the benefits of a meditation practice called Kirtan Kriya (KK). Kirtan Kriya is a type of yoga singing exercise used to enhance focus, improve memory, enhance mood and is proven to relieve some of the symptoms of memory loss, for

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instance, in Alzheimer's disease. Implementation of KK, for only 12 minutes a day provides promising benefits that may be beneficial for not only adults with cognitive decline but for children who need additional assistance to focus on the tasks at hand. Additionally, KK provides benefits of improved sleep patterns, reduced anxiety and depression, while also improving overall mental health states such as spiritual fitness (Khalsa, 2015). Mindful meditation practices such as KK may be beneficial for children who experience a heightened sense of pain, especially when they are ill or have minor injuries or when undergoing surgical procedures. Incorporation of mindfulness and meditation during these stressful events in their lives can actively reduce uncomfortable signs and symptoms. If implemented correctly into young children's everyday lives, mindfulness and meditation can make them more relaxed, especially in the clinical setting. Another positive outcome is that meditation can boost immune system functioning and is proven to reduce overall blood pressure during times of intensive care (Black & Slavich, 2016). The practice of mindfulness can be easily incorporated into the thought process, and meditation need not be a lengthy session each day (AAP, 2016). Implementation of mindfulness and meditation in school-aged children's everyday life can be a significantly effective approach to reducing their stress.

Teaching Strategies to Implement Mindful Meditation to School-Aged Children

Factors related to learning in childhood are important to consider when designing the pedagogy to teach meditation. School-aged children absorb and learn information in various ways based on both individual learning styles and preferences, as well as where the child is from a developmental standpoint. Cognitive development progresses rapidly among school-age children, as they move toward becoming concrete critical thinkers. Children in the later years of

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childhood are starting to understand more complex situations and are more capable of seeing the perspectives of others' points of view. As they master new skills, their confidence grows.

Achieving these cognitive developmental milestones provides reinforcement for new learning (London, et al., 2017, p. 770-771). Individualizing the school-aged child's mindfulness and meditation plan to both their developmental level and personal learning style can improve the effectiveness of the practice.

Early in middle childhood, children develop more fine motor and gross motor skills such as dressing themselves and tying their shoestrings. The development of motor skills is also a time when they become interested in sports and participating on a team as they're able to catch a ball and other sports skills. These physical changes lead to more independence from family members and can contribute to an increase in self-confidence (London, et al., 2017, p. 770-773). If mindful meditation is introduced and taught to children early, it can assist in enhancing their focus and self awareness in the context of these activities. Taking into consideration both a child's cognitive as well as physical abilities when teaching mindfulness meditation is helpful in effectively teaching the age-appropriate strategies.

Understanding what type of learner a child is can enhance meditation preparation practice. For instance, a child's learning style may be visual, auditory, kinesthetic (tactile), or a child may be a reading/writing learner. Children who are visual learners process information differently than someone who is a reading/writing learner. A visual learner may learn best from actually seeing something drawn out for them through picture representation, diagrams, or color-coded maps. Understanding what type of learner they are could further benefit a child to master the task at hand by physically drawing the idea out on paper themselves. A child who is a

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visual learner may need additional time to grasp concepts when provided a task through writing or merely reading through instructions. School-aged children who are tactile learners benefit primarily through enacting or engaging with the task at hand, unlike a reading/writing learner who benefits most from thinking through concepts by writing out and analyzing information (Elrick, 2018). School-aged children may benefit from a combination of these learning styles when first learning how to quiet the mind and tune in to mindful and meditation practices.

When first introducing school-aged children to mindfulness and meditation practices, it's essential to get to know the child or group of children. Incorporating the tactics to address different types of learning styles along with the use of supplemental materials, individual children's interests, and their developmental level are factors to be considered when choosing and implementing the most effective interventions. Whether teaching meditation in a group setting or one-on-one will dictate the degree of teaching methods that are feasible. Other observations and assessments needed to be made before initiating any meditation practice are analyzing physical abilities, emotional well-being, and the child's readiness to learn (Zenner, Herrnleben & Walach, 2014). Understanding the group of school-aged children can assist in creating a mindfulness and meditation practice that is both engaging and enjoyable.

When applying the child's individualized learning needs to meditation practice, it is essential to include the child in the planning process. Children are more willing to participate in activities actively they are interested in when they are provided with the appropriate resources for success that are challenging but attainable (Ferlazzo, 2014). Ensuring a safe environment for mindfulness and meditation practice that is not only interesting to children but also engaging can assist in exceptional outcomes. For example, a child with a vivid imagination, has that as a

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strength to be utilized when learning to practice meditation. This kind of link with individual interests and strengths can enhance teaching and learning meditation (Ferlazzo, 2014).

Meditation teaches school-aged children to increase their attention while also actively being mindful through forms of movement. For instance, Kirtan Kriya yoga singing exercise and body scans all of which can be utilized in the healthcare setting for pain reduction and relaxation purposes. It is relatively simple to teach a wide range of school-aged children about effective coping skills and mindfulness practices, all of which can help reduce stress and engage their coping skills (Khalsa, 2015). Meditation practices are useful in teaching children to control their stressors while also alleviating tension associated with pain.

A common approach to mindfulness meditation is referred to as Mindfulness Based Stress Reduction (MBSR). Implementation of MBSR varies depending on the intended audience and the specific problems being addressed; however, there are similar components present in all the versions (Zenner, Herrnleben & Walach, 2014). Children are taught formal mindfulness practices involving meditations used while being still and while moving, as well as informal practices where children learn to bring mindful awareness to everyday activities such as eating, bathing, shopping, etc. Children who are first beginning to mediate may have to take small steps toward progression into deeper meditation practices. For instance, one day, they can practice breathing techniques and then the next time practice their meditation posture. Teaching a variety of styles over time can help them find a meditation technique that would work best for them (Zenner, Herrnleben & Walach, 2014). Implementation of MBSR supports the school-aged child as meditation practices become more refined.

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Children, through meditation practices, become more self-aware and taught about mind wandering and teaching school-aged children about how the mind works can help them have a better understanding of their thinking patterns. In mindfulness and meditation practices, the mind is referred to as the “monkey mind,” meaning the mind is difficult to tame and stay focused because of how much the people’s thoughts wander throughout the day. Throughout the day, people have over 1,000 thoughts that may or may not be related to one another. In some cases, these thoughts are fueled by emotions, anticipation, anxiety, stress, information overload, and in some cases traumatic events (Levitt, 2019). When teaching children how to use meditation, nurses should encourage children to accept how they feel in the present and explain that there are no right or wrong thoughts or feelings.

Kirtan Kriya meditation practice is becoming more beneficial for those who participate. Alzheimer’s Research & Prevention Foundation discusses Kirtan Kriya as a yoga singing exercise to help boost brain function and enhance memory (Khalsa, 2015). Kirtan Kriya can be a fun, new, simple, and exciting way for children to learn and gear their focus towards the inner self. Although the Kirtan Kriya practice is taught and used commonly amongst people who have Alzheimer’s disease anyone including healthcare professionals, guardians or even parents are known to benefit from this practice. Little to no research has been done to incorporate school-aged children into Kirtan Kriya practice. Still, the overall benefits of this yoga singing exercises are evident and are said to be beneficial to anyone who is wanting to improve their memory (Khalsa, 2015). The Kirtan Kriya practice is a developmentally appropriate activity as well as an interactive meditation practice that may pose benefits for school-aged children. In Kirtan Kriya practice, the phrases integrated into the exercise are repeated and come from the

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mantra ‘Sat Nam, “translating to my true essence” (Khalsa, 2015, p.1). Helping children understand and explore different types of meditation practices will help them to develop more patience and to choose what works best for them during times of stress. All of these topics around coping skills help children to develop their inner resources. The more they practice being “in the moment,” the more skilled they become in self-calming techniques.

Using Mindfulness Meditation with Children in the Health Care Setting

Mindfulness and meditation practice integration into the healthcare setting may decrease stress associated with upcoming procedures and allow them to mentally prepare through calming of the mind, body, and spirit. Lerwick (2016) developed a system called CARE (Choices, Agenda, Resilience, and Emotions) to help reduce children’s anxiety and trauma that can be induced by health care settings. Although the method is not directly meditation, it utilizes a psychological intervention through calming techniques. This method shares some of the same concepts and rationale as meditation. Lerwick (2016) shares the following anecdote that was her personal experience as a child: As a child, she experienced undergoing anesthesia for a peritonsillar abscess. Her fear of and fight against needles prohibited a pre-op IV start, and a mask was placed over her nose and mouth. She gasped for air, all the while pleading to the anesthesiologist she could not breathe. Her fear was dismissed and minimized when the anesthesiologist responded by telling her “she was fine.” She remembers feeling like she was in danger because she felt as if she could not breathe. She had no pre-surgical preparation for the sudden fear and panic. Had she been told in advance what it might feel like to have a mask placed over her face, or to know it is a common feeling to gasp for air as part of the anesthesia process, her fears and, therefore,

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healthcare-induced trauma, would have been prevented (Lerwick, 2016, p. 143-150).

Lerwick (2016) put forth a rather simple protocol that incorporates four principles she has labeled by the acronym CARE. By offering a child the choice, the child is given power in an environment they may feel powerless. The agenda refers to informing the patient and family what is happening and what will be expected. Resilience is focusing on the strengths the child brings and reframing the negatives, and emotions refer to addressing common fears and talking them through to surface and normalize them.

Some children's hospitals employ personnel, or more often one employee, to support the use of mindfulness meditation. At Boston Children's Hospital (2019), considered one of the leading pediatric hospitals in the country, there is an integrative health department that provides therapies including guided imagery, reiki, yoga, expressive arts, massage and acupuncture. It is not hard to imagine that these services may become the norm in the treatment of hospitalized children. Integrative health departments can be assigned not only to provide services to children but to also assist in the training of staff to implement these practices more broadly. Hospitals that train all staff may be more successful in implementation of mindfulness and meditation practices than hospitals that relegate the task to one small department.

Nurses just entering the profession are perhaps more likely to be aware of the benefits of mindfulness and meditation for their patients and maybe the group that is the most likely to explore opportunities to incorporate the practice in a clinical setting. Meditation may be in the form of an impromptu, yet specific and prescribed conversation with a patient under pain and stress, or it may be in the form of comprehensive training for long term patients who have the time to study the practice in an in-depth manner (Boston Children's Hospital, 2019). Meditation,

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as one of many beneficial alternative therapies, holds a promise of increasingly widespread acceptance for children in the United States, as it is currently in other countries such as Taiwan. This development comes just as it is most needed by America's children who are experiencing stress at toxic levels (Center on the Developing Child at Harvard University, 2019).

Numerous scientific peer-reviewed studies have looked at the health impacts of various mindfulness-based stress reduction programs (MBSRP). Nejati, Zahiroddin, Afrookhteh, Rahmani, and Hoveida (2015) gave eight lessons of MBSRP to study participants. The participants were taught how to be aware of bodily sensations, thoughts, and emotions to reduce their level of stress. They learned a short breathing exercise and received written materials and a DVD related to meditation. MBSRP sessions included, conscious yoga, seated breathing exercises, and group discussions about reactions to stress. According to Nejati "MBSRP and conscious yoga were effective on the lifestyle, coping strategies, and systolic and diastolic blood pressures of our hypertensive patients" (Nejati et al., 2015, p. 1). MBSRP sessions displayed evidence of the positive effects on participants such as self-awareness and improved health status.

A similar program was successfully used with hospitalized children. Stewart (2015) a hospitalist at The Children's Hospital of Philadelphia, is a trained mindfulness instructor. According to Stewart (2015) states, "On a physiological level, it triggers the relaxation response, reducing stress and anxiety, slowing the heartbeat, and reducing blood pressure. Cognitively, it increases our ability to focus and solve problems effectively. And it has emotional benefits in helping us let go of judgment and move past rumination — the repetitive thoughts that sometimes get in our way" (Nejali et al., 2015, p.1). The fact that a large hospital system, such as

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Children's Hospital of Philadelphia, is dedicating the resources of a physician assigned to promoting mindfulness meditation with patients is evident of the level of evidence-based support of the efficacy of this approach. Meditation, which was once considered with skepticism as new-age quackery is now accepted in mainstream health care.

Research is showing promising results from even brief mindfulness related interventions with patients in a clinical setting. Some of these techniques could feasibly be used by nurses to help pediatric patients experiencing pain or distress. Ussher et al. (2012) utilizing a brief body scan exercise with adult patients suffering pain, provided a control group with a ten-minute audio recording about natural history and an experimental group with a ten-minute guided meditation session involving relaxation of the body from toes to head. These interventions were conducted twice, once in the clinical setting and once in the patient's "normal environment." The results showed that in the clinical setting, the body scan technique had immediate benefits for those experiencing pain. The results were not conclusive when the experiment was conducted in the patients' normal environments (Ussher et al, 2012). The body scan technique is promising in light of the fact that it is a very low cost, quick, and easily learned technique with absolutely no potential harm to patients. Presumably, the technique could be beneficial to a nurse working with a pediatric patient in pain. It can be more quickly implemented than the administration of pain medication and may potentially provide more immediate relief (Ussher et al, 2012). The body scan technique helps to calm the patient and decrease stress.

Numerous variations exist for the body scan technique utilized in the Ussher et al., (2012) study. The exercise can be conducted in a seated or prone position. Winston (2019) developed the following script that can be recorded and played to a person (or patient) at the University of

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California, Los Angeles (UCLA) Mindfulness Research Center. With repeated practice, people improve their ability to benefit from the calming and comforting effect.

When first learning one meditation practice such as body scan, children need to understand that they might feel light, heavy, or clammy in different parts of their body. When using the body scan method, the children can be directed to move their thoughts from their feet to their upper legs, belly, chest, hands, arms, back, neck, shoulders, and face. During each transition, children need to let go and relax, making sure they pay attention to all sensations and emotions felt in the present moment. Mindful meditation, like body scanning, can help school-aged children be more receptive to their emotions, enhance sleep, and improve their brain power throughout the day (Bertin, 2016). The body scan meditation is an appropriate and useful practice for school-aged children when starting to first meditate.

The body scan is a fundamental and popular meditation technique that can be easily taught to anyone, including children. It can be relatively quick, requiring only about ten minutes daily or even less time whenever a person is feeling overwhelmed and wants to relax. This body scan assists in the development of children's intuitive thought processes, concentration, and self-awareness (UCLA Mindfulness Research Center, 2019). As described in the above example, the child lays on his or her back, comfortably with the eyes closed. Both hands can be placed on the stomach while taking 2-3 full breaths. Some recommend that the hands should rise while taking a breath in and deflate on exhalation. The body scan typically begins at the lowest part of the body with the feet and move slowly up to your head. The body scan technique, or variations of it, seems to be a fairly typical starting place for beginning meditation.

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The huge explosion of interest and research in mindfulness practice and the potential applications for improving the lives of children provides an almost infinite degree of resources. Training and practice in mindfulness can range from taking a brief moment to get centered to participating in extensive professionally led workshops conducted over weeks or months. One example of the most concise form of application with children is to be more careful in wording questions. Mindfulness practice can encourage children to think more descriptively and positively. For example, adults can ask, “what happened” rather than asking, “What's wrong?” It is exciting to imagine the countless possibilities, both big and small, for applications in the practice of nursing (Lerner & Parlakian, 2011). Paying attention to the school-aged child's needs in relation to their emotional status is important to take into consideration.

School-age children can benefit from meditation and learn to be mindful by becoming more educated on what it means to meditate. They should learn about when to use meditation. It can be most beneficial for them during times of struggle, anxiety, nervousness, pressure and ruminations of worry. When meditation is implemented and guided by nurses, teachers, caregivers, and counselors, along with other influential people in the child's life, it can reduce stress-related pain (Mayo Clinic, 2019). Teaching of mindfulness and meditation practices may help school-aged children not only reduce stress but also assist them in improving their individualized practice.

Plenty of research points to the benefits of using mindfulness meditation as a coping strategy to help one reduce stress. Results are from both the everyday types of stress as well as long term toxic stress and even stress induced by a hospitalization. As the mind-body connection is being studied, exciting results point to great benefit in countless contexts. Specifically,

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teaching mindfulness meditation to children, whether in school or a health care setting, is a very easy, low cost, practical and effective intervention. Unlike many other forms of medical “treatment,” teaching mindfulness meditation does not have any known adverse side effects (Mayo Clinic, 2019). Mindfulness and meditation is a low cost and effective practice that aids in the development of needed coping skills.

Emerging Research in Children and Adolescent

Mindfulness-based interventions as a stress and pain reduction strategy for children is an emerging field of research. While the initial positive results are more anecdotal than scientifically conclusive, and in some cases, evidence-based, much more research is needed. Studies conducted on school-aged children is challenging, in part because children increase in maturity over time, making it difficult to control the variables. On the other hand, teaching mindfulness techniques is a non-invasive, low-cost, and readily available intervention without any apparent detrimental effects on children.

As the use of CAM and meditation increases, more research is becoming available specifically related to results with children. The Centers for Disease Control and Prevention (CDC) conducted a study to determine the use of alternative and complementary therapies like meditation, yoga, and chiropractors amongst but not limited to school-aged children. The CDC states in a 2018 study “In 2017, 8.4% of children (4.9 million) aged 4–17 years used yoga, 5.4% (3.1 million) used meditation, and 3.4% (2.0 million) used chiropractic services” (Black & Barnes, 2018, p. 1). The age group from 12-17 rather than 4-11 years old are more likely to use alternative measures like meditation, yoga, and go to the chiropractor (Black & Barnes, 2018, p. 1). The use of meditation practices are becoming more popular along with the use of CAM.

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Within twelve months, Black and Barnes (2018) found that only 5.6% of young men were actively involved in yoga while girls identified as active participants in yoga, were 11.3% of the population. Race and Hispanic origin were also taken into account in this study, confirming Hispanic children (5.9%) and non-Hispanic black children (4.6%) were less likely than non-Hispanic white children (10.5%) to participate in meditation, yoga, and chiropractors. The study continued from 2012 to 2017, showing significant increases in yoga and meditation altogether in the past 12 months while chiropractor use didn't fluctuate significantly. Black and Barnes (2018) has shown evidence that complementary and alternative therapies like meditation, yoga, and chiropractic treatment are becoming more and more utilized in children's lives. Although usage of meditation is becoming more pronounced in young lives, the percentage of children using alternative and complementary therapies is still deficient. The promises of meditation and mindfulness to improve coping skills, increase life enjoyment, and successfully reduce physical pain may be more realized when greater percentages of children are taught these practices (Black & Barnes, 2018).

Burke (2009) published a review of current literature on the topic of mindfulness-based approaches with children and adolescents. At that time, Burke (2009) concluded that “the current research base provides support for the feasibility of mindfulness-based interventions with children and adolescents; however, there is no generalized empirical evidence of the efficacy of these interventions” (p. 1). Burke (2009) addressed both self-rated and teacher-rated reductions in anxiety for children after a minimal intervention that lasted only 5-10 minutes per day for five weeks.

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Beauchemin, Hutchins & Patterson (2008) reported “decreased... anxiety, enhanced social skills, and improved academic performance” among the teen participants (p. 1). One encouraging aspect of this study is that these improvements were thought to be the result of a minimum intervention. The classroom teachers had a very small amount of training and were able to deliver mindfulness meditation instruction in short sessions effectively. Other similar examples provide support for the practice of these techniques in a health care setting where time for patient interactions is so limited. There is a reason to believe that relatively brief training in mindfulness has the potential for decreasing anxiety and stress among young patients.

Fewer studies have been focused on young children; however, one such randomized controlled study was conducted with children aged seven to nine in a school setting. Flook et al. (2010) were studying the potential impact of mindfulness practice training on executive function, which tends to be fairly limited among seven-year olds. The children in the study were given two 30-minute sessions per week in mindfulness-awareness practices over an eight weeks. The results, based on both parent and teacher feedback, showed that the training had a positive impact on executive function, especially in children with the most significant difficulties in executive functioning. These children showed an increased ability to regulate their behavior and improved metacognition, meaning the children’s awareness of their thought process. Both parents and children noticed these changes, but the children’s reactions weren’t documented in the study.

Waelde, Feinstein, Bhandari, Griffin, Yoon, and Golianu (2017), conducted a limited study on 20 patients who were adolescents age 13-17. All of the subjects had experienced chronic pain for at least 12-months before the study. Several factors including pain were

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examined before and after the mindfulness meditation sessions. The program entailed six weeks of training based on MBSR, called Inner Resources for Teens. Unfortunately, follow up data was only available on 14 out of the original 20 subjects. It is not possible to make conclusions about the usefulness of meditation from such a small group, especially because all the subjects had long term chronic pain. While the 14 children didn't show significant pain reduction, they reported enjoying the program, and some felt it had been beneficial. However, mindfulness meditation shows promise to help youth with chronic pain (Waelde et al., 2017, p. 1).

Implementation for Practice

There are several possible implications of this research for nurses working with children. Knowledge of mindfulness techniques can help a nurse to quickly implement a brief meditation with a patient who is fearful or in pain. Nurses can help patients take advantage of any mindfulness meditation services the hospital may have implemented, including the involvement of specially trained personnel. Finally, nurses can benefit from their practice of mindfulness meditation as a method to focus and center themselves during hectic workdays or especially stressful patient encounters. Internalizing this practice will increase the ease with which a nurse can share the benefits with patients.

As further research is conducted, the field of mind-body connection needs to be expanded. Increasing understanding of the benefits of mindfulness could have a significant impact on patients and the health care they receive. It is a vital component to seeing and treating patients as a whole person. As the practice of medicine continues to embrace a holistic approach, the use of meditation could grow in importance and value.

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As the practice of meditation grows among children, there also seems to be an increase in the options for teaching various types of meditation to children. Once children acquire these skills, they can apply them in different stressful situations, whether it be for pain management, test-taking anxiety, or even surviving in an environment of more extreme situations.

Conclusion

In today's world, children are experiencing high levels of stress. There are times when stress at low levels can be beneficial to motivation, learning and growth. When stress becomes intense, the negative impact on children can be damaging in both the short and long term. The term "toxic stress" is used to describe a level of stress that can cause lifelong emotional and health problems. Stress and pain can go hand in hand, especially in a hospital. Teaching children how to use meditation and mindfulness may be a tool for nurses to employ to help children through stressful and painful procedures or for those patients who are suffering more prolonged pain.

There are various models of how to teach meditation to children, ranging from one-on-one to group sessions. Daily practice, even in very short amounts, can be helpful while children are learning how to meditate. There is limited research that demonstrates positive outcomes such as stress reduction and pain relief from teaching mindfulness and meditation to children. Taiwan, like many other countries, have already fully integrated these into their health care practices and can be an excellent example for the United States on how to incorporate these into our health care systems. Further studies on the benefits of mindfulness and meditation for school-aged children would only improve the quality of the outcome of these practices. It could pave the way for one more tool that children could add to their "toolbox" for success. These

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practices are a great way to adhere to that standard because any child can partake in these practices no matter the skill level, or age. So, let us move forward towards a future where mindfulness and meditation are a common practice and let us move ever closer to staying true to "no child left behind."

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